

Applicant: Frederick L. Way II et al.
Serial Number: 09/686,235
Filed: October 11, 2000
For: GRAVITY DRIVEN STEERABLE VEHICLE

Group Art Unit: 3618
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Amendments to the Specification

Applicants note that the following amendments to the specification only provide for correction of typographic errors and substantially only all element number relevant to elements identified. No new matter is anywhere introduced.

Please replace the Background of the Invention on Page 2 with the following amended paragraph:

- This application is a continuation-in-part of U.S. Application No. 09/071,523, filed May 01, 1998, which claims the benefit of U.S. Provisional Application No. 60/045490, filed May 02, 1997. This application claims the benefit of U.S. Provisional Application No. 60/159,465 filed October 13, 1999. This application claims the benefit of U.S. Provisional Application No. 60/159465 filed October 13, 1999, which application claims the benefit of U.S. Application No. 09/071,523, filed May 01, 1998, which application claims the benefit of U.S. Provisional Application No. 60/045490 filed May 02, 1997. - -

Please replace the second full paragraph on Page 4 with the following amended paragraph:

- - The patents noted herein provide considerable information regarding the developments that have taken place in this field of non-motorized vehicle technology. Clearly the instant invention provides many advantages over the prior art inventions noted above. Again it is noted that none of the prior art meets the objects of the gravity driven vehicle in a manner like that of the instant invention. None of them is as effective and as efficient as the instant Gravity Driven Steerable Vehicle for maneuvering down steep, varied surface terrain and none of them ~~are~~ is operated from the prone face down and face forward position. The instant invention provides for a gravity driven steerable vehicle that can be fitted or retrofitted with skis and/or a slide pan, or a combination of skis, wheels, and/or slide pan. - -

Please replace the first paragraph of the Summary of the Invention on Page 4 with the following amended paragraph:

- -The most fundamental objects and advantages of the invention are: 1) a steerable gravity driven vehicle; 2) that such vehicle is ridden in a prone, face down, face forward position; 3) that such vehicle has at least one brake; 4) that such vehicle has at least two wheels or skis/slide pan or a combination thereof; and 6) a kit of components which ~~are~~ is used to retrofit a wheeled vehicle to

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one with wheels, skis, pan or a combination of wheels, skis or pan. - -.

Please replace paragraph 14 on Page 6 with the following amended paragraph:

- -Fig. 13 is a combined drawing of a top plan view, and side plan view and a rear plan view showing, in shadow, substantially all of the components and their relationship and which illustrates a wheeled vehicle with skis on the front and a slide pan to the rear which slide pan has grooves directed from front to ~~rear~~ rear which provide lateral stabilizing of the vehicle and which has a suspension system and a piston actuator which actuates braking by pressing the shovel/blade into the snow surface; - -.

Please replace paragraph 1 of the DESCRIPTION OF THE PREFERRED EMBODIMENTS on Page 7 with the following amended paragraph:

- -The following is a description of the preferred embodiment of the invention. It is clear that there may be variations in the size and the shape of the gravity driven ~~wheeled~~ steerable vehicle, in the materials used in the construction and in the orientation of the components. - -.

Please replace paragraph 7 on Page 7 (continued onto Page 8) with the following amended paragraph:

- -In order to ~~held~~ help the rider stay on vehicle 10 or 40, there is a means for harnessing, 28, the rider onto and into rider riding surface 14 when the rider is positioned on the vehicle. To provide additional comfort for the rider and to improve the stability of the vehicle while moving, there may be provided front means for absorbing shock ~~20~~ 30 exerted on each of the front wheels and tires 23 attached to each of the two front wheel hub and spindle assemblies 24 thereby damping shock caused by vehicle 10 passing over rough terrain, between front wheels and tires 23 and front axle assembly 18A. There may also be rear means for absorbing shock 32 exerted on each of the rear wheels and tires 23 attached to each of the two rear wheel hub and spindle assemblies 22 thereby further damping shock. - -.

Please replace paragraph 2 on Page 9 with the following amended paragraph:

- -There is also an automatic brake which actuates upon release of the hand grips for operation and parking safety. This feature is not essential to the basic embodiment of the invention, however this is an important additional feature. With this safety braking mechanism, the vehicle will

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be stopped if the rider were to fall off of the vehicle at some point during the operation of the vehicle. Additional to the automatic brake system there may also be a means for causing the vehicle to go into a constant tight turn mode of operation if the rider loses control or if the rider ~~fall~~ falls from the vehicle while in motion. - -.

Please replace paragraph 4 on Page 9 with the following amended paragraph:

- -In the preferred embodiment, the body and chassis of the vehicle ~~is~~ are made from light weight foam core fiberglass reinforced construction . The strong, rigid, impact resistant foam filled fiberglass body with aluminum inserts provides a single framework for attachment of all components. Fiberglass body, plated steel parts, and extensive use of aluminum provide optimum protection from the elements, and from impact damage. - -.

Please replace the first full paragraph and heading on Page 10 with the following amended paragraph and heading:

- -While much of the following description is presented as a description of a wheeled vehicle similar to the vehicle of the present invention as described above but which has been retrofitted or specially constructed to result in the vehicle for use on snow covered ~~terrain~~. ~~It terrain~~, it is important to note that the vehicle basically as described above but modified for use on snow may be custom made rather than created from a wheeled version by means for retrofitting the wheeled version. All of the disclosure above is applicable to the disclosure of the ski version of the vehicle except of course that portion which relates to the specifics of the braking system and some aspects of the steering systems.

1. RETRO FIT KITS/SKI VERSION

RETRO FIT KITS/SKI VERSION - -.

Please replace the last paragraph on Page 10 (continued on Page 11) with the following amended paragraph:

- ~~A~~. The front ski retrofit is attached to the existing front a-arm (wishbone) assembly of the wheeled version with either a double or the single arm / linkage geometry by utilizing the existing fastening system. When fixed to the suspension linkage the ski has the ability to pivot from an axis perpendicular to the axle allowing the ski tip 41 and ski heel 42 to pivot in opposition to one another, upwards and downwards and is limited in its pivot by a stop ~~mechanisms~~ mechanism mounted to either the ski or the mounting system. The width and length of the selected skis and the forward or

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rearward positioning of the pivot point is established in relation to the performance requirements of the terrain. The steering geometry has been designed to create a carving action when the skis are turned by the steering linkage, meaning that both ski tips rise slightly, the tails sink slightly and the inner edge of the ski opposite of the direction of the turn and the outer edge of the ski in the direction of the turn tilt slightly downwards into the snow, ice running surfaces. These edges can also be described as the ski edges on the inner radius of the turn. - -.

Please replace the first full paragraph on Page 11 with the following amended paragraph:

- ~~B~~ The independently or simultaneously actuated right and left, rear, front or rear and front, or independent rear and front combined brakes or single brake actuation unit whether one or divided mechanism is integrated in to the front ski 70A and trailing or ~~sliding~~ slide pan 72 or ski assemblies that are part of the vehicle/mountain sled retrofit package. The actuation of the mountain sled brake 26 is either mechanical, hydraulic, servo-mechanical, pneumatic or a combination of these technologies. When this solution is used as a retrofit it is intended whenever and wherever possible that the existing actuation system or systems be utilized. - -.

Please replace the last paragraph on Page 11 (continued on Page 12) with the following amended paragraph:

- ~~C~~ The rear brake system or systems is / are integrated into ~~a under body~~ slide pan 72 covering a portion or all of the ~~sled under body~~ chassis underside 12C from approximately the ~~middle of the sled length~~ chassis midpoint 12E and some distance forward of the rear axle location mounting surfaces 74 and is attached or nearly meets the ~~sled~~ chassis underside 12C and extends sufficiently across the width of the sled in the front in a fixed or in a limited manner with a hinge or slide like interface allowing the pan from the hinge point rearwards to move up and down or to slide or flatten out across the under face of the sled a distance equal to the translated stroke distance of an internally mounted shock system. The slide pan 72 will be a complete cover with a downward sloping straight or radiused lead edge, running from the mounted or hinged or meeting leading edge and transitioning to a gliding surface that runs almost parallel to the chassis underside 12C of the body or sled frame. The rear pan or ski assemblies will be covering a single or double shock absorption mechanism 76 able to operate independent ~~of from~~ or together with each other and the braking mechanism that will be substantially a swing arm or linearly actuated arm or blade 78 that will when actuated protrude out from the pan or ski below their running surfaces and into to the snow or ice surface at a positive, negative or right angle to the pan or running surface and will be depth adjustable equal to the geometry and stroke of the actuation. This pan or ski (if chosen) as seen

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from behind is profiled to provide maximum lateral grip and stability when either turning or gliding. The geometries are optimized to address snow condition and terrain. The final geometries are not disclosed here. - -.

Please replace the first full paragraph on Page 12 with the following amended paragraph:

- ~~D~~: Commercial: The winter retrofit package allows an owner of a summer mountain sled the simplified and flexible solution of utilizing at minimum the sled body with integral frame or body with separate frame and possibly many more components such as the axle, suspension, steering, and braking systems of summer mountain sleds to readily adapt it for winter recreation. - -.

Please replace the second full paragraph on Page 12 with the following amended paragraph:

- ~~E~~: Technical: The retrofit steering, braking, and rear tracking and control systems provide in conjunction with the already known benefits of an extremely controlled, stable and sure snow sledding experience. - -.

Please replace the third full paragraph on Page 12 with the following amended paragraph:

- ~~F~~: The benefits are therefore commercial as well as technical.

Please replace the second heading on Page 12 with the following amended heading:

- ~~2. ALTERNATIVE SKI VERSION~~ ALTERNATE SKI VERSION - -

Please replace the first paragraph and following heading on Page 13 with the following amended paragraph and following heading:

- ~~I~~: Due to the fact that only the optimized tires are replaced to provide improved friction interface between the sled and the running ~~surface~~ surface, all other subsystems, steering, suspension and braking remain the same and the product can be utilized to the extent of its capability as used on many other ~~surface~~ surfaces.

~~I-Double arm independent suspension (upper and lower control arm design)~~

DOUBLE ARM INDEPENDENT SUSPENSION (UPPER AND LOWER CONTROL ARM DESIGN - -

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Please replace the first list and following heading on Page 14 with the following amended list and following heading:

- ~~II~~ I. Maintaining constant and maximum contact of the entire running face of the tire, ski, and pan solutions with the running surface.
- ~~II~~ II. Reduces scrubbing and non-uniform wear of the running surfaces of the tires, skis and pans.
- ~~IV~~ III. Simplifies steering geometry compound angles allowing maximization of ski contact and carving benefits. This system is highly recommended for applications utilizing skis and sliding pan systems.

~~H. Integrated Body & Frame solution~~ INTEGRATED BODY & FRAME SOLUTION - -

Please replace the Abstract on Page 20 with the following amended abstract:

- A gravity driven steerable vehicle having ~~wheels~~ skis, ~~or skis~~ or a combination of wheels and skis for recreational use, most particularly on surfaces such as pavement, artificial hard-pack turf, mountain slopes, dirt roads, grass and hard-packed or non-packed snow. The vehicle has at least three (3) but preferably four (4) ~~wheels, or skis~~ skis or a combination of wheels and skis which may or may not be on independent axles one from the other and which may or may not be each independently shock suspended. There is also a steering mechanism for steering the vehicle and a driver compartment portion for containing a driver of the vehicle in a prone face-down and face-forward position. The vehicle is steerable by the driver from the prone face-down and face-forward position. The vehicle may further have a braking system for slowing or stopping the vehicle and a harness apparatus for harnessing the driver onto and into the vehicle. - -